

Sub B2

[placing a buffering or scavenging solution in contact with] providing an array of electrodes that is proximate to a substrate surface, said surface being proximate to one or more molecules bearing at least one protected chemical functional group attached thereto, selectively deprotecting at least one protected chemical functional group on at least one of said molecules;

bonding a first monomer having at least one protected chemical functional group to one or more deprotected chemical functional groups of said molecule;

selectively deprotecting a chemical functional group on the bonded molecule or another of said molecules bearing at least one protected chemical functional group;

bonding a second monomer having at least one protected chemical functional group to a deprotected chemical functional group of the bonded molecule or said other deprotected molecule; and

repeating the selective deprotection of a chemical functional group on a bonded protected monomer or a bonded protected molecule and the subsequent bonding of an additional monomer to said deprotected chemical functional group until at least two separate polymers of desired length are formed on the substrate surface wherein during said selective deprotection steps, an electric potential is applied to one or more selected electrodes sufficient to generate electrochemical reagents at the selected electrodes capable of deprotecting the chemical functional groups on said proximate molecules or monomers.

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Please cancel claim 17 without prejudice.

Please cancel claim 18 without prejudice.

Please cancel claim 19 without prejudice.

Please cancel claim 20 without prejudice.

Please cancel claim 21 without prejudice.

Sub B3

41. (amended) A method for electrochemical synthesis of an array of separately formed oligonucleotides on a substrate, which comprises the steps of:

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[placing a buffering or scavenging solution in contact with] providing an array of electrodes that is proximate to a substrate surface, said surface being proximate to one or more molecules bearing at least one protected chemical functional group attached thereto, selectively deprotecting at least one protected chemical functional group on at least one of said molecules; bonding a first nucleotide having at least one protected chemical functional group;